

2001

Crop Watch No. 2001-12, June 8, 2001

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2001-12
June 8, 2001

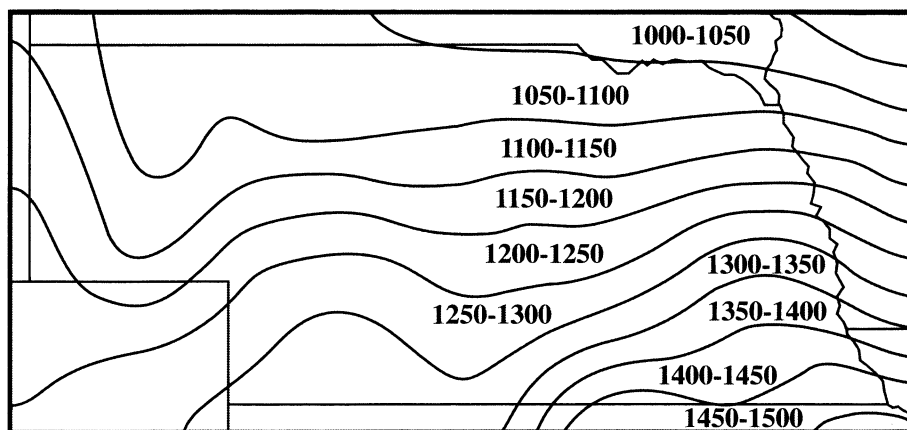
On your mark, get set, and scout those fields

Stalk borers

Begin scouting corn in southeast Nebraska for stalk borer this week and be prepared to begin scouting corn in other areas of central and eastern Nebraska soon.

As of June 4 we had accumulated 1050-1450 degree days (base 41F) since Jan. 1, depending on location (*see map*). Based on research at Iowa State University, stalk borer egg hatch begins at about 575 degree days and should be complete by 750 degree days. Scout corn for common stalk borers when about 1,300-1400 degree days have accumulated. Updated degree day maps will be published in future *Crop Watch* issues.

When scouting, check corn plants bordering grassy areas to determine the percentage of plants with stalk borer injury. Examine several sets of 10 plants. Look for feeding damage and insect-damaged plants to see if live larvae are



Accumulated growing degree days (as of June 4) used to estimate the development of stalk borer in corn. Scouting should begin when 1,300-1,400 growing degree days have accumulated. (IANR map by Al Dutcher, NU state climatologist)

present. If weedy grasses were common throughout the field in the previous year, the whole field may need to be scouted for common stalk borers. Use the table to help determine the economic injury level.

Stalk borer life cycle

The stalk borer life cycle begins in the fall when moths lay their eggs on grassy plants and ragweed. Often these are in fence rows, grass

(Continued on page)

Rootworms

Corn rootworm egg hatch was detected May 29 at UNL's Agricultural Research and Development Center near Ithaca and at the South Central Research and Extension Center near Clay Center, but may have begun a day earlier. This is somewhat earlier than last year, but within the normal range of occurrence. Hatch will occur in early to mid-June in northeastern and western Nebraska.

Initial hatch is very hard to detect in the field, as newly hatched rootworms are very small.

A method that can be used to detect hatch is to dig up corn plants, carefully shake off soil from the roots and put roots over a coffee can containing water. A coarse wire screen platform can be placed over the top of the can to hold corn roots. As the roots dry out, rootworm larvae will fall out and drop into the water where they can be more easily seen.

After hatch occurs you should begin to scout continuous corn

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Field updates

Gary Hall, Extension educator in Phelps County: Most crops are planted and fields have received welcomed moisture this past week. Crop growth stage is all over the board with some corn at the 5-leaf stage and other corn barely out of the ground. Soybeans are more closely grouped in growth stage. Warmer temperatures will hopefully provide a needed growth spurt to get crops up to normal size for this time of year.

There have been few insect problems, but weeds are growing well. Producers are trying to apply herbicides, but wind and weather have delayed applications.

Jennifer Chaky, coordinator of the NU Plant and Pest Diagnostic Clinic: We still are not seeing many disease problems in the clinic. On corn, we have seen some more possible herbicide injury and some

injury possibly due to wind or other environmental factor.

The following diseases were diagnosed May 21 - June 1: corn - fusarium root and crown rot (Holt County).

Ralph Anderson, Extension Educator in Buffalo County: Crops here are well watered for now and would like some warm sunny weather. Planting and emergence is completed and weeds are coming. Producers are eager to get back into the fields to finish fertilizing, cultivating and spraying. Hay harvest has started but has also been a challenge.

Except for pale color and emerging weeds, most fields are looking good. We just got the light trap started Friday and most flights have been small with a few corn borer and wooly bear moths. The light trap report is at <http://www.ianr.unl.edu/buffalo/agriculture/lighttrap.htm>

High Plains Grass Field Day June 14

The High Plains Grass Seed Association will be hosting a field day Thursday, June 14, at the Dan Laursen Farm near Alliance. Tour leader will be Tony Merrigan, Extension Educator in Box Butte County.

To drive to the Laursen farm, take West 10th Street west out of Alliance about 15 miles to a T in the road; go two miles north to another T in the road; then west 1/2 mile.

Registration begins at 8:30 a.m. with coffee and doughnuts. Cost is \$10 and includes lunch.

Tour topics and presenters include: *Variety Trial Studies* with David Baltensperger, extension alternative crops specialist, PHREC; *Residue Management Studies* with Jim Margheim, research assistant, PHREC; *Preparation of Fields for Seeding* with Dan Laursen, president of the High Plains Grass Seed Association; *Weed Control Studies* with Robert Wilson, extension weed specialist, PHREC; *Production and Marketing Practices for Western Wheatgrass* with Dan Laursen

The tour will continue in the afternoon with the following topics and presenters: *Nitrate Leaching and Water Use Study* with Jürg Blumenthal, extension PHREC soils specialist; *Potential Insect Problems and Controls* with Gary Hein, PHREC Extension entomologist; *Potential Disease Problems and Controls* with John Watkins, extension plant

pathologist, and Jennifer Chaky, Coordinator, UNL Plant and Pest Diagnostic Clinic; and the *Row-Integrity Study* with Eric Nielsen, PHREC research assistant.

Following the program and tour on the Laursen farm, there will be tours of nearby grass production fields.



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Lisa Jasa, Editor

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Stalk borers *(Continued from page 105)*

waterways or terraces bordering crop fields. These eggs hatch in late April or early May and larvae bore into the grasses or other weeds such as ragweed and begin feeding. As the stalk borers grow or if the plants are mowed or burned down with herbicides, they move into adjacent corn plants to complete their development.

Common stalk borers are rather distinctive in appearance, with three white stripes on a background brownish-purple coloration. The two stripes on the side stop just behind the three pairs of true legs, then continue about half-way down the length of the caterpillar. Feeding damage by stalk borers may kill the growing point if the caterpillar bores into the base of the stalk, or may produce ragged feeding holes in the leaves, if feeding starts in the whorl and then moves down into the stalk.

Treatment

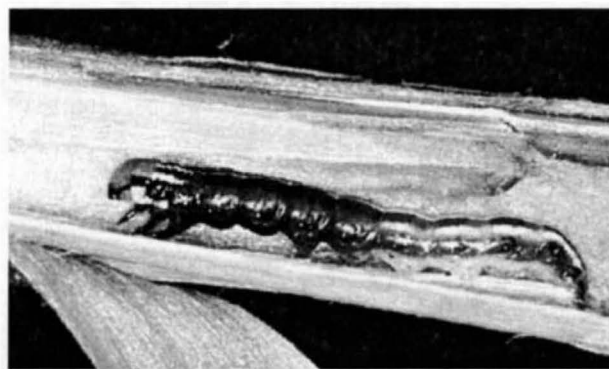
To be effective, insecticides must be applied before common stalk borer larvae have entered the stalk. In cases where stalk borers begin feeding on grassy weeds, or other vegetation in field edges, control is most effective if timed between 1400 and 1700 degree-days (base 41F), which corresponds to the first half of the period that stalk borers are migrating from weedy hosts into corn. If the infestation is restricted to the field margin, use a border treatment.

In cases where there is a history of field-wide stalk borer damage at a site, insecticides applied to corn and timed for egg hatch may be used to reduce damage. The disadvantage of this approach is that there is no effective way to sample for stalk borers at this time, so treatments are made without knowledge of whether an insecticide treatment would be profitable that year.

Insecticides may be mixed with fast-acting herbicides being used to burn down early season weeds, or applied several days after use of slower-acting herbicides. Check the label for compatibility of different insecticide and herbicide mixtures.

A variety of foliar insecticides are labeled for control of common stalk borers in corn, including Ambush 2E (6.4-12.8 oz per acre), Asana XL (5.8-9.6 oz per acre), Lorsban 4E (2-3 pints per acre), Pounce 3.2EC (4-8 oz per acre), Capture 2EC (2.1-6.4 fl. oz per acre) or Warrior 1EC (2.56-3.84 oz per acre).

Bob Wright
Extension Entomologist
South Central REC



Common stalk borer in corn

(Below) Stalk borer damage in corn



Common stalk borer economic injury levels (% injured plants)
(Assumes 80% insecticide efficacy, and \$2 bu/acre grain value).

Corn leaf stage	125 bu/acre yield potential Control costs/acre		
	\$7	\$10	\$13
1	7	9	12
2	8	11	15
3	10	14	18
4	11	16	20
5	11	16	21
6	22	32	41
7	100	100	100

Corn leaf stage	150 bu/acre yield potential Control costs/acre		
	\$7	\$10	\$13
1	5	8	10
2	7	9	12
3	8	12	15
4	9	12	16
5	9	13	17
6	18	26	33
7	100	100	100

Corn rootworms (Continued from page 105)

Table 1. Duration of immature stages of western corn rootworm at constant temperatures

Stage	Days to complete stage (male/female) at different constant temperatures (F)			Degree days to complete stage (48.2 F base)	
	64.4	69.8	75.2	Males	Females
1 st instar larva	8.1/8.6	5.6/6.2	4.8/5.3	70.4	77.7
2 nd instar larva	6.8/7.1	4.9/5.4	4.3/4.9	61.7	70.6
3 rd instar larva	15.0/15.5	11.2/11.9	9.4/10.4	140.5	149.2
Pupa	13.5/13.8	10.1/10.1	7.8/8.4	122.2	125.1
Hatch to adult emergence	43.4/45.0	31.8/33.6	26.3/28.9	394.8	422.6

Source: Jackson and Elliot, 1988, *Environ. Entomol.* 17:166-171.

fields for corn rootworm larvae and damage, regardless of whether a soil insecticide was applied at planting. This will help to determine whether an insecticide is needed, if one was not used at planting, and provide a check of the effectiveness of planting time insecticide applications. In case of poor control, this will allow you to apply a rescue treatment before too much damage has occurred.

To check for the presence of larvae in a field, dig a 7-inch cube of soil centered on the corn plant. Sample a minimum of two plants at each of five sites in a field. Carefully search

through the soil and plant roots for larvae. There are three larval instars (stages). The greatest amount of damage is done in the last stage. Degree-day accumulations needed to complete development of different stages are shown in Table 1. The first instars are about 1/16 inch long and difficult to find without magnification. Often the first detected rootworms are second instars. Corn rootworm larvae are slender, cream-colored, with brown heads and a dark plate on the top side of the tail, giving them a double-headed appearance. Mature larvae are 1/2 inch long. Search through the soil and roots over a sheet of black plastic to make it easier to find the small white worms. There is no established treatment guideline for

corn rootworm larvae, but some consultants advise treating if there are two or three rootworms per plant. The usefulness of this guideline is dependent on your ability to find rootworm larvae in the soil.

If needed, cultivation time treatments should be applied soon after egg hatch begins. Cultivation time applications of insecticides are an effective means of reducing injury to corn plants from rootworm feeding damage. Most granular soil insecticides for corn rootworms (except for Aztec and Fortress) that are labeled for application at planting time also are labeled for use at cultivation. Incorporate granules with 1-2 inches of soil after application; effectiveness may be

decreased unless the insecticide is incorporated.

Other options include the use of Furadan 4F and the use of chemigation treatments with Lorsban 4E. Control with Furadan 4F will generally be improved if the treatment is cultivated into the soil, unless sufficient rainfall occurs after application to move the insecticide down into the root zone. Lorsban 4E applications should be timed for the first appearance of second instar corn rootworms. Additional information on suggested insecticides, rates and restrictions is available at <http://www.ianr.unl.edu/ianr/entomol/instabls/crwlarv1.htm>

Bob Wright
Extension Entomologist
South Central REC

Don't forget June 18-21 weed tour

The 2001 University of Nebraska Weed Tour is June 18-21; however, the North Platte stop on June 20 has been cancelled due to hail and wind damage. Anyone interested in viewing the North Platte site later should contact Gail Wicks, Extension weeds specialist, at 308-532-3611 ext. 151.

Monday — June 18

1 p.m., Concord, Haskell Agricultural Laboratory

Tuesday — June 19

9 a.m., Lincoln, Havelock Research Farm

3 p.m. Clay Center, South Central Research and Extension Center

Wednesday — June 20

9 a.m., North Platte, **Cancelled**

3 p.m. (MDT), Sidney, High Plains Agricultural Laboratory

Thursday — June 21

8:30 a.m. (MDT), Scottsbluff, Panhandle Research and Extension Center

Moths, moths, moths: They're everywhere

A variety of moths have been showing up in light traps and around people's houses, lawns, etc., the past few weeks. Some of these may have implications for field crop insect management. At this point we don't have evidence of economic infestations, but people should be watching for developing caterpillar populations. Updated information on light trap results from Nebraska can be found at <http://entomology.unl.edu/fldcrops/>

We have begun to pick up increasing numbers of armyworm moths the last few days at Clay Center. I have not heard reports of armyworm larvae yet, but they have been abundant this spring in states south and east of us, and may be moving into Nebraska now.

Armyworm larvae often start developing in grassy pastures, field edges, or on grassy weeds within corn. As these food sources are exhausted, they may feed on corn. They feed mostly during the night. They may not be seen easily during the day, but their damage should be visible. They also may damage wheat or other small grains.

Market Journal

Effects and implications of Initiative 300 will be the featured topic for next week's *Market Journal* videoconference. The University of Nebraska Cooperative Extension broadcast will be 8 p.m., Thursday, June 14 and be downlinked to about 20 Nebraska sites. It also will be available later for on-line viewing at

www.marketjournal.unl.edu

Guest speakers will include Dave Aiken, NU Extension agriculture law specialist, and Al Prosch, NU Extension coordinator for Pork Central. They'll talk with program host, Doug Jose, NU Extension farm management specialist, about how the initiative affects producers.



Armyworm

Yellow-striped armyworms were found feeding in the whorl of corn plants in Saunders, Hamilton and Clay counties last week. The damage is not economic, but it may be confused with that caused by stalk borers. Yellow-striped armyworms feed in the whorl and do not burrow in the stalk as stalk borers do. They may vary in coloration but have a distinctive yellow stripe down the length of each side of the body unlike the stalk borer which has stripes interrupted by a broad dark area behind the legs.

Variegated cutworm moths have been caught frequently in light traps at Concord and Clay Center over the past few weeks. Variegated cutworms are most frequently pests of alfalfa, although we have received a few reports of damage in corn this spring. I received a sample this week from an alfalfa field near North Platte which was being damaged by variegated cutworms. If abundant, variegated cutworms may damage alfalfa after harvest and delay regrowth. Variegated cutworms have a series of diamond-shaped yellowish spots forming a line down the middle of the caterpillar's back.

Another situation to watch for is when weeds are controlled in corn or other crops. In Kansas and other states to our south they have reported caterpillars of several species moving from broadleaf weeds to corn, soybeans and other crops as the weeds were killed.

Bob Wright
Extension Entomologist
South Central REC

Is that four or five pairs of prolegs and a light or dark brown head?

A series of guides on identifying caterpillars in field crops was recently published online by Kansas State University. The publications are written by Entomologists G. Wilde, H. L. Brooks and K. O. Bell and feature color photos.

Bob Wright, Extension Entomologist
South Central REC

Identifying Caterpillars in Corn and Sorghum,

<http://www.oznet.ksu.edu/library/entml2/s121.pdf>

Identifying Caterpillars in Alfalfa,

<http://www.oznet.ksu.edu/library/entml2/S120.pdf>

Identifying Caterpillars in Wheat,

<http://www.oznet.ksu.edu/library/entml2/S122.pdf>

Identifying Caterpillars in Soybean,

<http://www.oznet.ksu.edu/library/entml2/s116.pdf>

Identifying Caterpillars in Sunflower,

<http://www.oznet.ksu.edu/library/entml2/s123.pdf>

June rains may mean more July grain

The recent rains have benefitted the winter wheat crop. In addition, for wheat that is headed, the cooler temps during the filling period have improved the outlook for winter wheat yields. Following are summaries of wheat conditions across the state.

Winter wheat condition in the Panhandle continues to improve. Although there are many spotty

wheat stands, in the last two weeks growth has accelerated and plant vigor has improved. Recent scattered rain showers have helped the winter wheat crop, although weeds are a concern where wheat stands are thin. Some late-season herbicide treatments have been made in these thin stands to prevent problems at harvest. As of June 4, wheat development in the Panhandle ranged from

plants just jointing (spring-planted wheat) to plants just beginning to head. In general, the winter wheat crop is one to two weeks behind normal development. This slower development places wheat at risk for yield and test weight loss from late June heat. We hope that the recent trend for cooler than normal temperatures continues through June.

In the West Central and Southwest areas winter wheat conditions range from poor to good. Some varieties were able to tolerate the weather and field conditions at planting much better than others. Many stands are thin and the amount of tillering was lower than normal, hence weeds may be a problem in those fields not treated earlier. With the large difference in stands and vigor, all the winter wheat variety plots were rated. The ratings varied from 50% to 100%. Soil borne mosaic is a problem in some fields.

In the South Central area wheat is nearly finished flowering. There is some evidence of foliar diseases. Soil moisture conditions are good.

Wheat fields in the Southeast District are spotty. Fields planted into soybean stubble last fall were challenged by dry conditions and difficulty getting proper drill penetration. Varieties which were winter tender were severely damaged. Hardy varieties generally came through the winter with minor thinning. Leaf diseases are beginning to emerge and with the recent rains could become very severe. Proper planting equipment and variety selection are key ingredients for a successful harvest this year.

**Robert N. Klein, Extension Cropping Systems Specialist
West Central District**
**Drew J. Lyon, Extension Dryland Crops Specialist
Panhandle District**
**Roger W. Elmore
Extension Crops Specialist
South Central District**
**Lenis A. Nelson
Extension Crop Variety and Seed Production Specialist
UNL, Agronomy Department**

Purple loosestrife -- getting control before it's widespread

Purple loosestrife became the newest plant species on Nebraska's noxious weed list January 1. Six other species share the designation: Canada thistle, plumeless thistle, musk thistle, leafy spurge, spotted knapweed, and diffuse knapweed.

Noxious weeds cause significant crop and pasture losses, reduce land value, and can be poisonous to man, livestock or wildlife, leading to state laws requiring their control.

Purple loosestrife (*Lythrum salicaria*) was introduced to North America from Europe in the 1800s. Since then, it has slowly invaded wetlands and waterways from the northeastern United States to the Great Lakes region and further into the prairie states including Nebraska. It is estimated that about 15,000 acres of Nebraska's wetlands are infested, mostly along major rivers. Producers and homeowners need to take steps to stop the further spread of this highly competitive weed.

When wetlands are taken over by loosestrife, the natural habitat is lost and the productivity of native plant and animal communities is severely reduced. Song birds will not feed on loosestrife seeds. Muskrats can not use roots for food or shelter. Waterfowl are affected when dense impenetrable stands of loosestrife eliminate nesting sites and open water. Local fish and wildlife that can't move are lost forever. Vigorously growing purple loosestrife will clog irrigation canals, ditches, stream banks and reservoirs.

Purple loosestrife can colonize and thrive easily because it is a prolific seed producer and has a strong perennial root system (rhizome). Each plant can produce up to two million seeds in one season. Seeds can be carried far away by water, wind, or birds and can remain viable for many years. The rhizome grows well in marshy soils and can help spread the species if washed away by river water. Purple loosestrife is a highly competitive plant. It grows fast and quickly traps nutrients and sunlight. Soft muddy wetlands become a woven mat of tough roots with no significant food value for many wildlife species.

Identification

Purple loosestrife is relatively easy to identify, however, not every plant with purple flowers is purple loosestrife. Several native species produce purple flowers and can be mistakenly identified as purple loosestrife. These include the American germander and various species of vervains. American germander is commonly found along rivers, creeks and ditches in Nebraska. It flowers at the same time as loosestrife and its purple flowers can be easily mistaken for it; however, the shape of the leaf can be used as a distinguishing feature. Purple loosestrife has a rounded or heart-shaped leaf base and a sharply pointed tip (*Figure 1*).

(Continued on page 111)

Purple loosestrife *(Continued from page 110)*



Figure 1. Purple loosestrife leaf

The American germander leaf is ovate in shape and has serrate leaf margins (Figure 2). American germander is much shorter and readily consumed by wild life.

Purple loosestrife can grow to 3-9 feet tall with several, square stalks per plant. These stalks are tough and often appear to be woody at the base. Leaves are on opposite sides of stalk, thin and appear sharply pointed. In Nebraska, it flowers from July to September. Flowers can range from red to rose-purple in color. The flowers are arranged on 1- to 3-foot spikes. The fruit is a small oblong capsule with two valves containing many small seeds. There are many capsules within a spike and several spikes per plant. Each spike can produce up to 100,000 tiny, light seeds that are readily moved by wind. Seed germination typically ranges from 80% to 100%. The root system is very strong and when mature, the root branches become thick and woody.

Integrating control measures

Purple loosestrife has no natural enemies or plant competitors in North America. A single control measure can't provide long-term, sustainable, management of this weed; however, if control practices are integrated in a systematic manner, significant advances can be achieved.

1. Prevention and education:

Education is key to helping the public identify this noxious weed and control it, rather than inadvertently aiding its development. Remember, one plant can produce one to two million seeds.

2. Manual control: Pulling and digging plants can be very effective



Figure 2. American germander leaf

for small areas. Pulling is most effective on plants that are one to two years old. Loosestrife spreads vegetatively from stems, therefore, regeneration from discarded plants is likely. They should be dried and burned.

If plant pulling is not feasible, removing the flower heads can help reduce the spread of seeds. Simply cut the heads in July and August (before the flower sets go to seed). Seed formation starts at the bottom of the flower and progresses to the tip. Before cutting the seed head off, check to see that ripe seeds are not present.

3. Cutting: Cutting can actually spread loosestrife if the cuts are not removed because the cut stalk portions can sprout. All cut plants should be removed and burned. Place all plant parts in a carton or protected site so that they can dry completely without danger of being spread

4. Repeated mowing and disking: Purple loosestrife is also a common problem in "semi-wet" areas that are not under water year-round. Such sites might include low farm land and wet meadows along major waterways, including many infested sites along creeks and canals in northeastern Nebraska. Mechanical and cultural control methods can be used during dry periods. Mechanically removing the above-ground plant parts could significantly lower the production and translocation of sugars to the roots and crowns, lowering the conversion to and accumulation of a storage carbohydrate such as starch.

**Stevan Knezevic, Integrated Weed Management Specialist
Northeast REC, Haskell Ag Lab**

Wheat disease update

Wheat Stripe Rust Alert: Bob Bowden, Kansas State University wheat pathologist, reports significant stripe rust activity throughout Kansas as of early June. In Nebraska stripe rust has been reported from the southwest through the southeast. Stripe rust was our most evident rust disease in 2000, but severity was low. Cool, wet weather this spring in the southern Plains states promoted its development in Texas and Oklahoma in April. Similar weather during much of May has been ideal for its development; however, as temperatures increase in June, stripe rust activity will decline. In some Nebraska fields, stripe rust may reduce yields, but in others the disease will probably have little effect.

As the name implies the rust pustules appear as distinct yellow-orange stripes on the leaves. The disease can cause serious damage if the flag leaves become severely rusted. At this late stage chemical control is questionable, since much of the wheat is fully headed. Quadris, Manzate, Dithane or Penncozeb can be applied up to growth stage 10.5 (Feekes) or flowering. If growers or seed producers are thinking of spraying, check the growth stage of the wheat to make certain the application will be within label guidelines.

Other diseases: Leaf rust is developing slowly in the central Great Plains and is at trace amounts in southern Nebraska. A recent survey of the Nebraska Panhandle revealed few disease problems, with only background levels of wheat streak mosaic in some fields. Barley yellow dwarf is present in some fields, but this is probably spring infection which will have little effect on yields. In fields near wheat residue, tan spot is present and with the cool weather, is moving onto the middle and upper leaves.

**John Watkins
Extension Plant Pathologist**

Postemergence weed control in soybeans

Soybeans have been planted throughout much of the state and producers are now gearing up for their summer weed management strategies. For some producers, their choice of strategy will be easy since they planted herbicide-resistant crops and will likely choose a corresponding herbicide. For others, selection may be much more complex, given the number of products on the market to control various weeds within different windows.

With the strange and somewhat wet weather pattern this year, producers who used a preemergence herbicide may have more flexibility in their postemergence weed management strategy. With the preemergence herbicide down, producers will generally be able to wait longer before applying postemergence herbicides or cultivating.

Several other strategies include the use of an early postemergence herbicide with residual such as a Roundup + Pursuit tank mix, a timely postemergence application followed by cultivation or two separate postemergence applications timed roughly 20-30 days apart, letting the weed growth stage dictate application timing.

Regardless of which strategy you use, timing of the weed removal is critical. (See May 25 *Crop Watch*.) Soybeans should be kept free of weed competition from the 2nd trifoliate stage to beginning bloom. The weed management strategy you choose should be flexible but provide for weed removal during this critical time. Management strategies will largely be based on the time constraints of individual producers. Picking the strategy that best fits into your schedule will help you maintain optimum weed management in fields this year.

Growers should consider several issues when selecting a postemergence herbicide. One such

issue is crop safety. Many soybean herbicides used for broadleaf control are cell membrane disrupters. Herbicides such as Blazer, Cobra, Resource, and Flexstar will do well on many broadleaf weeds, especially waterhemp, but also may cause some amount of burning on the soybean leaves. Research has shown there is little or no yield impact from this burn in early growth stages of soybeans. Once soybeans begin blooming, avoid using the cell membrane disrupter herbicides. In soybeans herbicides

such as Poast, Fusion, Fusilade, and Select will easily control annual grasses. One slight problem, however, is that these grass herbicides require crop oil and when tank mixed with cell membrane disrupters for broadleaf control, things can really heat up. In addition, grass control will generally be slightly reduced when one of these grass products is tank mixed with a broadleaf herbicide.

Brady Kappler
Weed Science Educator

Tips for controlling problem weeds in soybeans

Black nightshade: Problematic in many soybean stands mid to late season. Control can be achieved with Cobra at 10-12 oz/a, Blazer at 1-1.5 pt/a, Reflex/Flexstar at 1 pt/a, Liberty on Liberty Link soybeans at 20-28 oz/a, Pursuit DG at 1.44 oz/a, Raptor at 5 oz/a, and Roundup Ultra in Roundup Ready soybeans at 32 oz/a. Because nightshade moves in late in the season, cell membrane disrupters may not be a feasible treatment, especially during blooming.

Kochia: Roundup Ultra can be used in Roundup Ready soybeans at 32 oz/a. Herbicides offering less control, in the 80% range, include Basagran at 2 pt/a, Pursuit DG at 1.44 oz/a, Raptor at 5 oz/a Liberty in LL soybeans at 28 oz/a, and Synchrony in STS soybeans at 0.5 oz/a. Keep in mind that many areas have ALS-resistant kochia, which means that herbicides such as Synchrony, Pursuit, and Raptor will not provide control.

Velvetleaf: Control can be achieved with cell membrane disrupters including Blazer at 1-1.5 pt/a, Cobra at 10-12 oz/a, Reflex/Flexstar at 1 pt/a, and Basagran at 2 pt/a, Classic at 0.5-0.75 oz/a, Pursuit DG at 1.44 oz/a, Raptor at 5

oz/a, Resource at 4 oz/a for velvetleaf < 4", Synchrony in STS soybeans at 0.5 oz/a, Roundup Ultra in Roundup Ready soybeans at 32 oz/a, and Stellar at 6 oz/a.

Waterhemp: Because much of the waterhemp is ALS-resistant, only a handful of herbicides provide satisfactory control. These include cell membrane disrupters such as Blazer/Status at 1-1.5 pt/a, Cobra at 10-12 oz/a, Reflex/Flexstar at 1 pt/a, as well as Stellar at 6 oz/a and Roundup Ultra in Roundup Ready soybeans at 32 oz/a.

Brady Kappler, Extension
Weed Science Educator

Callisto labeled

The EPA has now labeled Callisto herbicide, manufactured by Syngenta. Callisto is labeled as both a pre and postemergent herbicide in corn. The active ingredient is mesotrione and it is a pigment synthesist inhibitor. Callisto controls many broadleaf weeds, including pigweed, waterhemp, kochia, and velvetleaf with excellent crop safety.

Brady Kappler, Extension
Weed Science Educator

Postemergence herbicides labeled for soybeans

Herbicide	Action	Rate per Acre	Application timing	Additives
Assure II	Grass	7-8 oz	Grass 4" shattercane and corn 12-18"	NIS 1 qt/100**
Basagran	Broadleaf	1-2 pt	Broadleaf < 4"	COC 1 qt/A**
UltraBlazer	Broadleaf	1-1.5 pt		NIS 1 qt/100**
Classic	Broadleaf	0.5-0.75 oz		NIS 1 qt/100**
Cobra	Broadleaf	10-12.5 oz	Broadleaf 2-4"	NIS 1 qt/100**
Extreme	Broadleaf + Grass	3pt	Grass and broadleaf <12"	NIS 1 pt/100 +
Fert. or AMS				
First Rate	Broadleaf	0.3 oz	Broadleaf <10"	NIS 1 pt/100**
Flexstar	Broadleaf	1 pt	Broadleaf < 4"	NIS 1 qt/100**
Fusilade	Grass	6-12 oz	Grass 2-12"	NIS 1 qt/100**
Fusion	Grass	6 oz	Grass 4", shattercane and corn 12-18"	NIS 1 qt/100**
Generic glyphosates	Broadleaf + Grass	Refer to May 18 <i>Cropwatch</i>	Grass and broadleaf <12"	AMS
Harmony GT	Broadleaf	.083 oz	Broadleaf 2-8"	NIS 1 qt/100 + UAN 2-4 qt/A
Pinnacle	Broadleaf	.25 oz	Broadleaf 2-8"	NIS 1 qt/100 + UAN 2-4 qt/A
Poast Plus	Grass	18-24 oz	Grass 4", shattercane and corn 12-18"	COC 1 qt/A**
Pursuit	Broadleaf + Grass	1.44 oz		NIS 1 qt/100 + UAN 1-2 qt/A**
Raptor	Broadleaf + Grass	5 oz	Broadleaf <4"	NIS 1 qt/100 + UAN 2-4 qt/A**
Reflex	Broadleaf	1 pt		NIS 1 qt/A**
Reliance STS ^a	Broadleaf	0.5 oz	Broadleaf <6"	COC 1 qt/A**
Resource	Broadleaf	4-8 oz	Broadleaf <4"	COC 1 qt /A**
Roundup UltraMax*	Broadleaf + Grass	26oz	Grass and broadleaf <12"	AMS
Select	Grass	6 oz	Grass 4", shattercane 6-18", corn 12-24"	COC 1 qt /A**
Stellar	Broadleaf	5 oz	Broadleaf 2-6"	NIS 1 qt/100**
Synchrony STS*	Broadleaf	0.5 oz	Broadleaf <6"	COC 1 qt/A**
Touchdown Pro	Broadleaf + Grass	1 qt	Grass and broadleaf <12"	AMS

^aMay use non-STs when mixed with NIS + ammonium fertilizer instead of COC

*Requires herbicide resistant soybeans

**More than one additive is labeled

Treat soybean seed when replanting

With the recent spell of cool wet weather, poor stands are becoming evident in some soybean fields. In many cases this is due to Pythium and some Fusarium. Both of these fungi are favored by cool wet soils.

If you need to replant, be sure to treat your seed with a fungicide. Otherwise you will be placing the unprotected seed into a soil environment which has a high level of fungal activity. In most cases when soybean fields with a seedling disease problem are replanted without using a seed treatment, the problem is continued.

When selecting a seed treatment product, consult NF00-411 "Seed Treatment Fungicides for Soybeans." It is a comprehensive list of products and the fungi they are active against. I recommend a good combination product with broad-spectrum activity if you do not know which fungus you're up against. Also, remember that coverage is the key to good efficacy with a seed treatment. If the seed is not covered, it is not protected.

Loren J. Giesler
Extension Plant Pathologist

Saturated soils and the effect on soil nitrogen

Recent rains in southeast Nebraska may have left some areas in standing water for extended periods. When soils are wet for a continuous period, anaerobic bacteria convert nitrate nitrogen to N_2O or N_2 through a process called denitrification. In order for denitrification to occur, there needs to be a supply of nitrate. If an ammonium form of nitrogen was applied and the soil remained cool, nitrification may have been delayed. If soil nitrate levels were already low, denitrification will be minimal.

How important and what is the magnitude of this nitrogen loss?

The rate of nitrogen loss to denitrification depends on several factors. Dr. John Doran, NU soil microbiologist, suggests that soils have to be above field capacity for two days (at least 70% water-filled pore space) and the temperature has to be greater than 60 F for denitrification to occur at rates that would be agronomically important (see table in May 11, 2001 *Crop Watch*). Practically, this means the soils have to have standing water or there has to be continual rainfall. Generally, it takes 12 hours to 2 days for soils to reach field capacity after saturation.

In addition, there has to be a source of organic carbon for the microbes to use as a food source and, of course, nitrate-nitrogen. The pH of the soil also influences the rate of denitrification. As pH is reduced to pH of 5.0, the rate is also reduced. Under denitrifying conditions, nitrogen losses can be 2 lbs N/acre/day or greater. However, the losses can be much greater under some conditions.

Fields which have been continuously waterlogged and have had significant water infiltration may have leaching. Depending on the infiltration rate, nitrate may be below the surface but still available for crop use later in the season.

Suggested action

First, determine if the soils have been waterlogged for more than two days and whether the soil temperatures were over 60 F. Map or note where losses might occur. Observe these areas over the next few weeks. Watch for yellowing of the older leaves. If yellowing begins, apply 20-30 lbs. nitrogen per acre. A

chlorophyll meter or remote sensing information also can be used to help determine the need for nitrogen. Compare the suspect areas to areas that are adequately fertilized and did not have saturated conditions to help determine the extent of any problem.

Charles Shapiro
Soil Scientist - Crop Nutrition
Haskell Ag Lab, Northeast REC

Shapiro research targets nutrient use efficiencies

This is the first in a series of brief spotlights on the research pursuits of our contributing authors. Most NU Extension specialists also have major appointments in the NU Institute of Agriculture and Natural Resources' Research Division.

Charles Shapiro, the soil fertility specialist at the Northeast Research and Extension Center, conducts research on improving nutrient use efficiency for corn and other crops. He has been at the Haskell Agricultural Laboratory near Concord since 1984.

Specific research includes the interaction of tillage and nitrogen rates, site-specific manure applications, sequestering of swine lagoon nutrients in forages, potassium effects on stalk strength and corn yield, nitrogen timing on sandy soils, effect of low pH on crop production in sands, and optimum soil test P values and phosphorus application methods.

Dr. Shapiro's appointment is split between the IANR Research and Extension divisions. His extension efforts include sharing his research results with the public. Targeted extension programs include developing Comprehensive Nutrient Management Planning tools for Nebraska livestock produc-



Research update

ers, using large plots to demonstrate nitrogen rate calculation procedures, and distributing easy to use tools to make nitrogen recommendations.

Dr. Shapiro, along with Extension educator Dick DeLoughery, was instrumental in developing the nitrogen management tools featured earlier this year in *Crop Watch*. Research results and interactive worksheet versions based on 20 years of on-farm trials are available on the *Crop Watch* web site at cropwatch.unl.edu

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